



***Lake Lemon***  
***Aquatic Vegetation Management Plan***  
***2006 Update***  
February 13, 2007

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## Executive Summary

Aquatic Control was contracted by the Lake Lemon Conservancy District to complete aquatic vegetation sampling in order to update their lakewide, long-term integrated aquatic vegetation management plan which was originally completed in 2004. Funding for the update of this plan was obtained from the Lake Lemon Conservancy District and the Indiana Department of Natural Resources-Division of Fish and Wildlife as part of the Lake and River Enhancement program (LARE). The update will serve as a tool to track changes in the vegetation community, to adjust the action plan as needed, and to maintain eligibility for additional LARE funds. Items covered include the 2006 sampling results, a review of the 2006 vegetation controls, and updates to the budget and action plans.

Aquatic vegetation is an important component of lakes in Indiana; however, as a result of many factors this vegetation can develop to a nuisance level. Nuisance aquatic vegetation, as used in this paper, is described as plant growth that negatively impacts the present uses of the lake including fishing, boating, swimming, aesthetic, and lakefront property values. The primary nuisance species within Lake Lemon is the exotic plant Eurasian watermilfoil. The negative impact of this species on native aquatic vegetation, fish populations, water quality, and other factors is well documented. American Lotus, common coontail, spatterdock, and small pondweed are also abundant in Lake Lemon and can create nuisance situations around dock areas and in boating lanes. The original plan recommended the use of Renovate herbicide (active ingredient triclopyr) for control of Eurasian watermilfoil throughout the lake. In 2005, enough funds were available to treat all milfoil areas. This significantly reduced milfoil abundance. However, funds were cut in 2006 so not all of the areas containing milfoil received treatment. This allowed milfoil in the untreated areas to continue to spread. In 2007, it is recommended that LARE funds be used to treat all areas of milfoil that do not get treated following the traditional contact herbicide treatments. This strategy will not eliminate milfoil from the lake, but may lessen the problem of the untreated areas being allowed to flourish and colonize new areas. It is also recommended that the near shore contact herbicide treatments be pushed back to early June in order to avoid regrowth during the busy boating season. The contact treatments should only focus on areas where lake access and boating lanes are impaired by plant growth. The estimated costs for 2007 actions include \$30,000 for milfoil treatments with Renovate herbicide, \$30,000 for native vegetation control, and \$5,200 for plant sampling and plan updates.

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## 1.0 INTRODUCTION

This report was created in order to update the Lake Lemon Aquatic Vegetation Management Plan. The update will serve as a tool to track changes in the vegetation community, to adjust the action plan as needed, and to maintain eligibility for additional LARE funds. Items covered include the 2006 sampling results, a review of the 2006 vegetation controls, and updates to the budget and action plans. The plan update was funded by the Indiana Department of Natural Resources Lake and River Enhancement Program (LARE) and the Lake Lemon Conservancy District.

## 2.0 2006 SAMPLING RESULTS

Two surveys were completed in 2006 in order to document changes in the plant community and to determine success or failure of the current control techniques. A tier I (reconnaissance survey) was completed in May. This survey allowed for the determination of control areas and the documentation of any changes in emergent and rooted floating plant community. A second tier I survey along with a tier II survey was completed in August. These surveys were completed in order to document success or failure of the control technique and to compare to the 2004 and 2005 tier II data. The surveys also allow for the documentation of changes in the native plant community.

### 2.1 Spring Tier I Survey Results

On May 15, 2006, a Tier I survey was completed on Lake Lemon. A Secchi disc reading was taken and found to be 3.0 feet. Plants were growing to a maximum depth of 7 feet. The survey revealed 18 distinct plant beds comprised of 14 species of which 12 were native. The plant beds encompassed an area of 413.1 acres (Table 1 and Figure 1).

**Table 1. Lake Lemon Tier I Survey Results, May 15, 2006**

Lake: Lemon Date: 5/15/06 Secchi: 3.0 ft		Number of plant beds: 18    Littoral zone max depth: 7 ft Number of species: 14 Littoral zone size: 413.1 acres																
Plant Bed I.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Bed Size (acres)	16.0	18.5	8.6	2.4	192.8	8.3	102.0	4.4	11.7	11.9	5.2	3.1	1.2	8.6	0.5	5.9	2.6	9.4
Eurasian watermilfoil	2	3	4	3	3	1	1	1	3	4	1	3	2	4	1	4	2	4
curlyleaf pondweed	1	2	2	1	-	3	2	1	1	1	1	1	1	1	1	2	1	1
common coontail	1	-	1	1	3	4	2	1	1	1	1	1	1	-	1	-	1	1
American water willow	1	1	1	-	-	-	1	1	1	1	1	1	1	1	-	1	1	1
button bush	1	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
small pondweed	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
spatterdock	-	-	-	-	1	1	4	-	-	-	-	-	-	-	-	-	-	-
American lotus	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-
common duckweed	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
American pondweed	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
American elodea	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
floating-leaf pondweed	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
arrowhead	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
blue flag iris	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-

\*Plant density ranked from 1-4 with 1 being least dense and 4 being most dense.



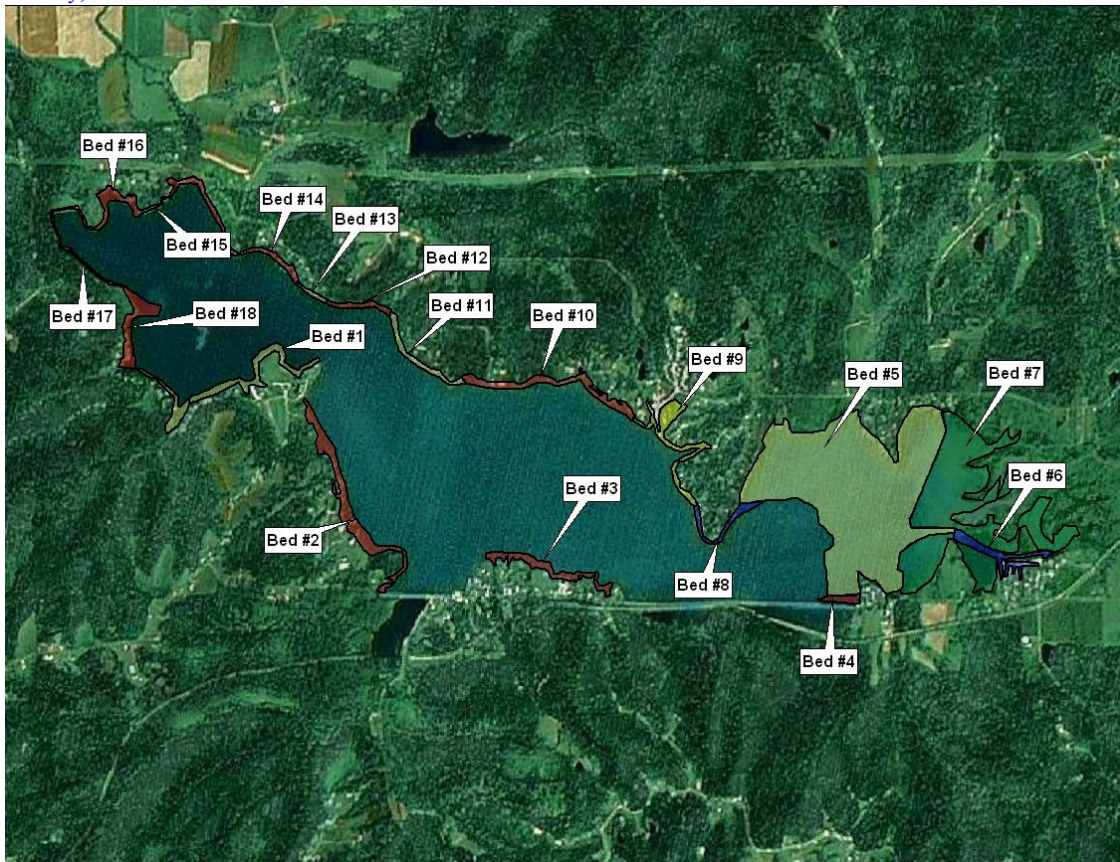


Figure 1. Tier I plant beds, Lake Lemon, May 15, 2006

Plant bed 1 was located on the south side of Lake Lemon and includes the Riddles Point area (Figure 1). It was determined to be 16.0 acres in size. A total of six species were observed within the plant bed. Overall, submersed vegetation was sparse in this area. Eurasian watermilfoil (*Myriophyllum spicatum*) and small pondweed (*Potamogeton pusillus*) both scored an abundance rating of 2. Curlyleaf pondweed (*Potamogeton crispus*) water willow (*Justicia Americana*), common coontail (*Ceratophyllum demersum*), and button bush (*Cephalanthus occidentalis*) were present at the lowest abundance rating.

Plant beds 2, 3, and 4 were very similar in composition and were located along the south shore, east of bed 1. Combined, these three beds totaled 29.5 acres. These beds were dominated by Eurasian watermilfoil. Curlyleaf pondweed scored an abundance of 2 in beds 2 and 3 while it scored an abundance rating of 1 in bed 4. Portions of beds 2 and 3 were treated with Renovate herbicide on May 18.

Plant bed 5 was the largest plant bed totaling 192.8 acres. Bed 5 was located in the eastern shallow end of Lake Lemon. In 2005 this bed was dominated by topped out Eurasian watermilfoil. This bed accounted for a large percentage of the 2005 milfoil treatment. Milfoil had returned to this area, but at a lower density. Milfoil and coontail both scored a 3 within plant bed 5. Spatterdock (*Nuphar variegatum*), American lotus

(*Nelumbo lutea*), and common duckweed (*Lemna minor*) were present at the lowest abundance rating.

Plant bed 6 included the area known as the Chitwood Channels. This area is located in the far eastern portion of Lake Lemon and encompassed 8.3 acres. Coontail was the primary species in this bed followed by curlyleaf pondweed. Eurasian watermilfoil, spatterdock, duckweed, American pondweed (*Potamogeton nodosus*), American elodea (*Elodea canadensis*), floating-leaf pondweed (*Potamogeton natans*) and common arrowhead (*Sagittaria latifolia*) were present at the lowest abundance rating.

Plant bed 7 was located in the easternmost portion of Lake Lemon. This plant bed is comprised of very shallow water that was dominated by rooted floating and emergent vegetation. Plant bed 7 was the second largest bed measuring 102.0 acres. At the time of the survey the most common species was spatterdock that received a score of 4 (American lotus eventually dominates this area, but it had not reached it's maximum level at the time of the survey). American lotus, curlyleaf pondweed, common coontail, and button bush all received scores of 2. Eurasian watermilfoil, water willow, floating-leaf pondweed, elodea, and American pondweed were all present at the lowest abundance rating.

Plant bed 8 was located just west of plant bed 5 along a deep rocky shoreline. This bed measured 4.4 acres and vegetation was sparse in this area. Eurasian watermilfoil, curlyleaf pondweed, common coontail, and water willow were present at low levels.

Plant bed 9 was located just west of bed 8. This bed measured 11.7 acres. Eurasian watermilfoil was the primary species in this bed and received an abundance rating of 3. Curlyleaf pondweed, coontail, and water willow were also observed in bed 9.

Plant bed 10, 14, 16, and 18 were scattered along the northwest shoreline of Lake Lemon and encompassed 35.8 acres. Eurasian watermilfoil dominated these beds and received a score of 4. Curlyleaf pondweed, water willow, and common coontail were present in all four beds. The only difference between the beds was that coontail received a score of 2 in bed 16 instead of a score of 1 which it received in beds 10, 14, and 18. Portions of these beds received treatment in late May.

Plant bed 11 was located just west of plant bed 10 along the north shoreline of Lake Lemon and was determined to be 5.2 acres. Vegetation was sparse in this plant bed. Eurasian watermilfoil, coontail, curlyleaf pondweed, and water willow all received abundance ratings of 1.

Plant bed 12 was located just west of bed 11 along the north shore. The main difference between bed 11 and 12 was that Eurasian watermilfoil received a score of 3 instead of 1. Curlyleaf pondweed, water willow, and coontail were all observed at low levels.

Plant bed 13 was located west of plant bed 12 along the northern shoreline of Lake Lemon and was determined to be 1.2 acres. Eurasian watermilfoil was most abundant in this bed and received a score of 2. Curlyleaf pondweed, coontail, water willow, and small pondweed all received a rating of 1.



Plant bed 15 was located along the northwest shore of Lake Lemon. This bed was found to be 0.5 acres in size. This is a deep area dominated by rocky substrate so there was very little vegetation in this area. Eurasian watermilfoil, curlyleaf pondweed, and coontail all received a score of 1 in this plant bed.

Plant bed 17 was located on the deep southern shore of Lake Lemon just east of the dam. This bed was determined to be 2.6 acres in size. Eurasian watermilfoil was the most abundant species and received a score of 2. Curlyleaf pondweed, coontail, and water willow were also observed.

## 2.2 Summer Survey

Tier I and II surveys were completed August 7, 2006 in order to document changes in the plant community and to gather data that will be used for determining 2007 management techniques.

### 2.2.1 Tier I Survey

On August 7, 2006, a Tier I survey was completed on Lake Lemon. A Secchi disc reading was taken and found to be 1.5 feet. Plants were growing to a maximum depth of 10 feet. The survey revealed 18 distinct plant beds comprised of 15 species of which 13 were native. The plant beds encompassed an area of 460.9 acres (Table 2 and Figure 2). There appeared to be an increase in native vegetation density and abundance in the summer survey when compared to the spring survey. Curlyleaf pondweed had significantly decreased when compared to the spring survey. Eurasian watermilfoil was still abundant in several areas and appeared to have spread to new areas.

**Table 2. Lake Lemon Tier I Survey Results, August 7, 2006**

<b>Lake: Lemon</b>		<b>Number of plant beds: 18</b>					<b>Littoral zone max depth: 10 ft</b>											
<b>Date: 8/7/06</b>		<b>Number of species: 15</b>																
<b>Secchi: 1.5 ft</b>		<b>Littoral zone size: 460.9 acres</b>																
<b>Plant Bed I.D.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>
<b>Plant Bed Size (acres)</b>	<b>7.2</b>	<b>0.4</b>	<b>4.4</b>	<b>6.4</b>	<b>5.3</b>	<b>12.0</b>	<b>6.0</b>	<b>149.7</b>	<b>120.2</b>	<b>6.0</b>	<b>1.9</b>	<b>37.3</b>	<b>1.7</b>	<b>3.4</b>	<b>3.2</b>	<b>8.0</b>	<b>17.4</b>	<b>1.6</b>
small pondweed	3		2	3	1	2									2	1	2	1
brittle naiad	3		1	1	1	2		1	1	1		2			3		3	4
American water willow	2	1	1		1			1				2	1	1	1	1	1	
common coontail	1			1	1	2	2	3		4	2	2	1	1	2	2	1	
American lotus		4						1	4	1								
common cattail		1							1									
rose mallow		1							1									
Eurasian watermilfoil			4	1	4	2	4	2	1	1	4	2	4	4	1	4	1	
spatterdock								1	2	1								
sago pondweed						2		1	1	1		1						
American pondweed								1	1	1								
curly-leaf pondweed								1										
creeping water primrose								1										
American elodea									1	1								
blue-flag iris																1		

\*Plant density ranked from 1-4 with 1 being least dense and 4 being most dense.

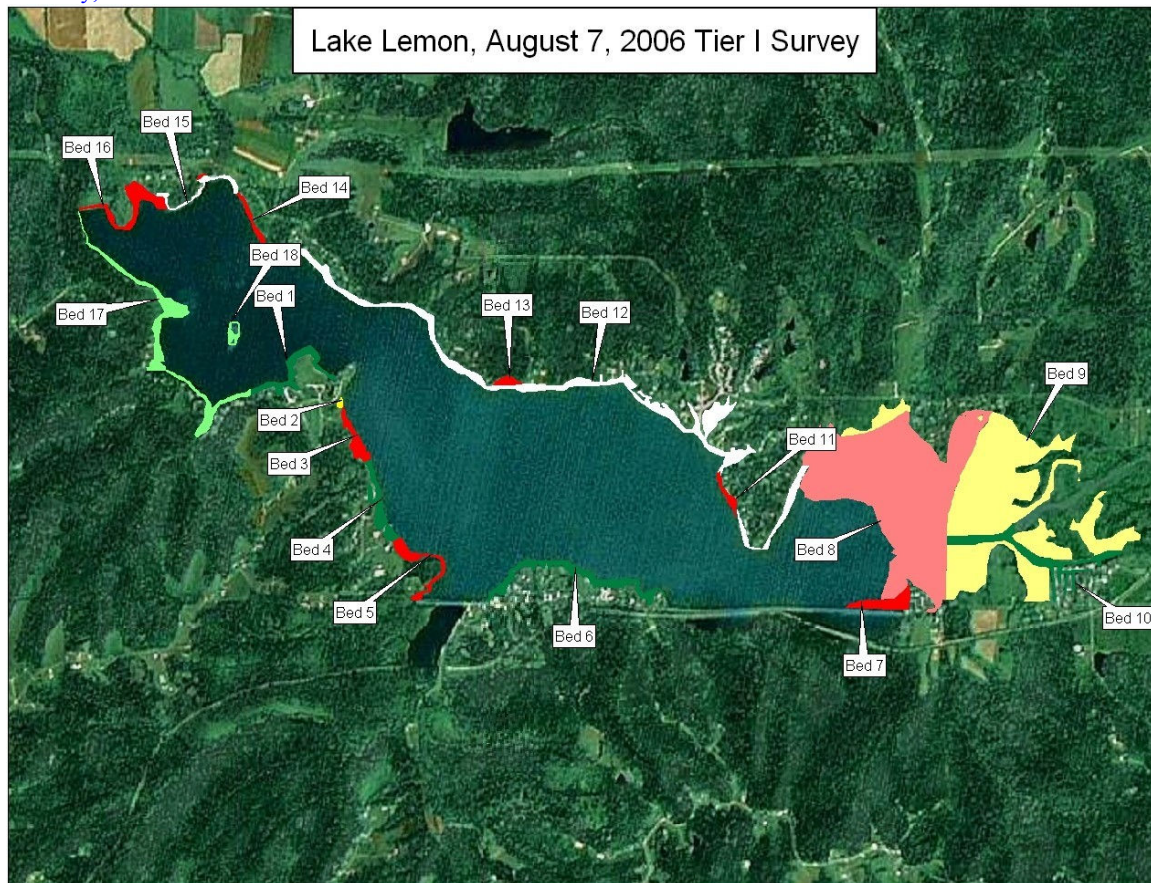


Figure 2. Tier I plant beds, Lake Lemon, August 7, 2006.

Plant bed 1 was located in the Riddle Point area along the southern shore of Lake Lemon. This bed totaled 7.2 acres. Small pondweed and brittle naiad were the most abundant species and received an abundance rating of 3. Water willow and common coontail were also present at a lower abundance.

Plant bed 2 was located just south of bed 1. This bed was found to be 0.4 acres and comprised mainly of American lotus which received a score of 4. Water willow, common cattail (*Typha latifolia*), and swamp rose mallow (*Hibiscus palustris*) were also present at lower abundance.

Plant bed 3, 5, 7, 11, 13, 14, and 16 were all dense milfoil plant beds that comprised a total of 30.8 acres (these areas are all marked in dark red on Figure 2). Eurasian watermilfoil received a score of 4 in these areas. Small pondweed, coontail, and brittle naiad were also present in these plant beds.

Plant bed 4 was located just east of bed 3 along the south shore of Lake Lemon. This bed was determined to be 6.4 acres. Small pondweed was the most abundant species and received a score of 3. Eurasian watermilfoil, brittle naiad, and water willow were also present in this bed.

Plant bed 6 was located along the south shore between the two causeways. This bed was determined to be 12.0 acres. Small pondweed, brittle naiad, common coontail, Eurasian watermilfoil, and sago pondweed (*Potamogeton pectinatus*) made up this bed and were all an abundance rating of 2.

Plant bed 8 was the largest plant bed at 149.7 acres. This bed was located in the eastern shallow end of Lake Lemon. Common coontail was the most abundant species in this area with a score of 3. Eurasian watermilfoil was second in abundance with a score of 2. Brittle naiad, water willow, American lotus, spatterdock, sago pondweed, American pondweed, and curlyleaf pondweed were also observed.

Plant bed 9 encompassed the eastern shallow end of the lake and was dominated by rooted floating vegetation, primarily American lotus. This bed comprised an area of 120.2 acres. American lotus was the most abundant species and received a score of 4. Spatterdock was second in abundance and received a score of 2. Brittle naiad, cattail, rose mallow, Eurasian watermilfoil, sago pondweed, American pondweed, and American elodea were also observed.

Plant bed 10 included the area known as the Chitwood channels. This bed was measured at 6.0 acres. Coontail was the most abundant species and received a score of 4. Water willow, American lotus, Eurasian watermilfoil, spatterdock, sago pondweed, American pondweed, and American elodea were also observed.

Plant bed 12 was located along a substantial stretch of the north shore. This bed encompassed 37.3 acres and had rather sparse submersed vegetation. Brittle naiad, water willow, coontail, and Eurasian watermilfoil received a score of 2. Sago pondweed was least abundant and received a score of 1.

Plant bed 15 was located along the northwest shoreline of Lake Lemon just west of plant bed 14. The plant bed was determined to be 3.2 acres. Brittle naiad was the most abundant species with the score of 3. Small pondweed and coontail both received a score of 2. Eurasian watermilfoil and American water willow both received a score of 1.

Plant bed 17 was located along the south shore just east of the dam. This bed measured 17.4 acres and was comprised primarily of brittle naiad. Small pondweed, water willow, coontail, and Eurasian watermilfoil were also observed.

Plant bed 18 was located around the islands in front of the Riddle Point boat ramp. This plant bed was found to be 1.6 acres and comprised primarily of brittle naiad. Small pondweed was also observed in bed 18.

#### 2.2.2 Tier II Survey

On August 7, 2006 a Tier II survey was completed on Lake Lemon immediately following the Tier I sampling. A Secchi disk reading was taken prior to sampling and was found to be 1.5 feet. Plants were present to a maximum depth of 10.0 feet. One hundred sites were selected within the littoral zone. The depth of the sample sites was determined by the trophic state of the lake. Lake Lemon is classified as a eutrophic lake, so the survey protocol calls for some sample sites to be deeper than 10.0 feet. No vegetation

was encountered deeper than ten feet during the Tier I survey, so we used the hypereutrophic classification that only samples to a maximum of 10.0 feet. Ninety sites were sampled from 0-5 feet and 10 sites were sampled from 6-10 feet. Results of the sampling are listed below in Table 3. Overall aquatic vegetation distribution and abundance is illustrated in Figure 3.

**Table 3. Lake Lemon Tier II survey results, August 7, 2006.**

<b>Occurrence and abundance of submersed aquatic plants in Lemon Lake</b>						
County: Brown/Monroe		Sites with plants: 73		Mean species/site: 1.25		
Date: 8/7/2006		Sites with native plants: 47		Standard error (ms/s): 0.103		
Secchi (ft): 1.5		Number of species: 8		Mean native species/site: 0.62		
Maximum plant depth (ft): 10		Number of native species: 6		Standard error (mns/s): 0.076		
Trophic status Eutrophic		Maximum species/site: 4		Species diversity: 0.73		
Total sites: 100				Native species diversity: 0.66		
<b>All depths (0 to 10 ft)</b>		<b>Frequency of</b>		<b>Rake score frequency per species</b>		<b>Plant Dominance</b>
<b>Species</b>	<b>Occurrence</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>	
Eurasian watermilfoil	53.0	47.0	21.0	14.0	18.0	19.4
brittle naiad	26.0	74.0	8.0	6.0	12.0	12.0
coontail	23.0	77	4	9	10	16.2
curlyleaf pondweed	10.0	90.0	0.0	5.0	5.0	3.2
small pondweed	10.0	90.0	4.0	1.0	5.0	3.6
Chara spp.	1.0	99.0	1.0	0.0	0.0	0.2
slender naiad	1.0	99.0	0.0	0.0	1.0	0.2
sago pondweed	1.0	99.0	1.0	0.0	0.0	0.2
<b>Depth: 0 to 5 ft</b>		<b>Frequency of</b>		<b>Rake score frequency per species</b>		<b>Plant Dominance</b>
<b>Species</b>	<b>Occurrence</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>	
Eurasian watermilfoil	54.4	45.6	21.1	15.6	17.8	18.9
brittle naiad	27.8	72.2	7.8	6.7	13.3	13.1
coontail	25.6	74.4	4.4	10.0	11.1	18.0
curlyleaf pondweed	11.1	88.9	0.0	5.6	5.6	3.6
small pondweed	11.1	88.9	4.4	1.1	5.6	4.0
Chara spp.	1.1	98.0	1.1	0.0	0.0	0.2
slender naiad	1.1	98.9	0.0	0.0	1.1	0.2
sago pondweed	1.1	98.9	1.1	0.0	0.0	0.2
<b>Depth: 5 to 10 ft</b>		<b>Frequency of</b>		<b>Rake score frequency per species</b>		<b>Plant Dominance</b>
<b>Species</b>	<b>Occurrence</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>5</b>	
Eurasian watermilfoil	40.0	60.0	20.0	0.0	20.0	24.0
brittle naiad	10.0	90.0	0.0	0.0	10.0	2.0

Plants were present at 73 of the sample sites and native plants were present at 47 of the sites (Figure 3). A total of 8 species were collected of which 6 of these species were native. The mean number of species collected per site was 1.25 and the mean number of native species collected was 0.62. The species diversity index was 0.73 and the native species diversity index was 0.66. Eurasian watermilfoil was the most abundant species collected and it's density and location is illustrated in Figure 4. Coontail was the second most abundant species in the survey (Figure 5). The exotic species, curlyleaf pondweed, was also collected, primarily in the eastern basin of Lake Lemon (Figure 6).



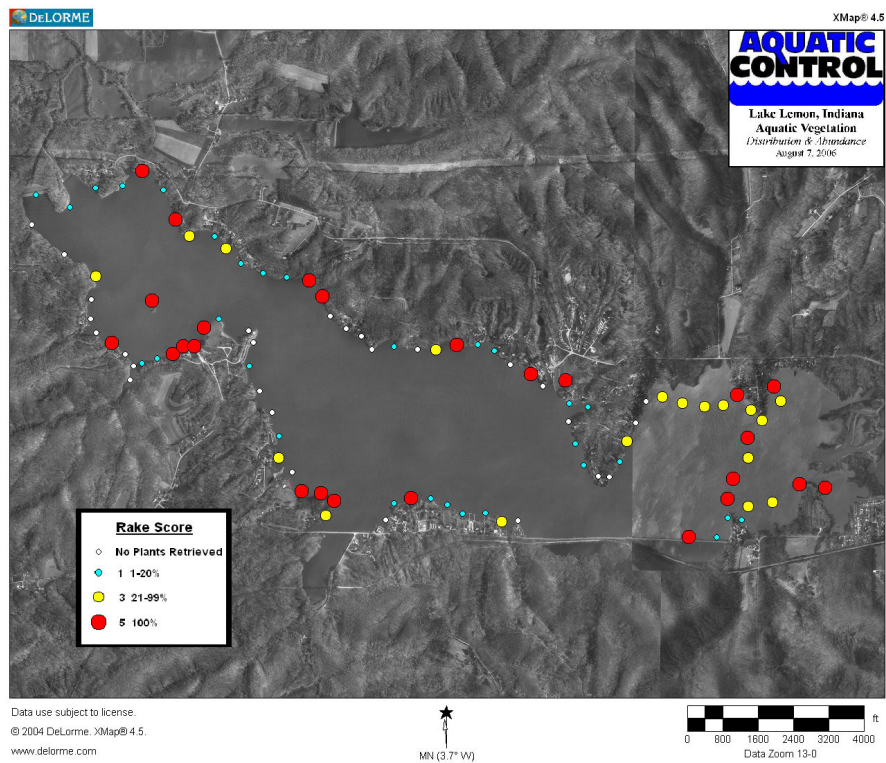


Figure 3. Aquatic vegetation distribution and abundance, Lake Lemon, August 7, 2006

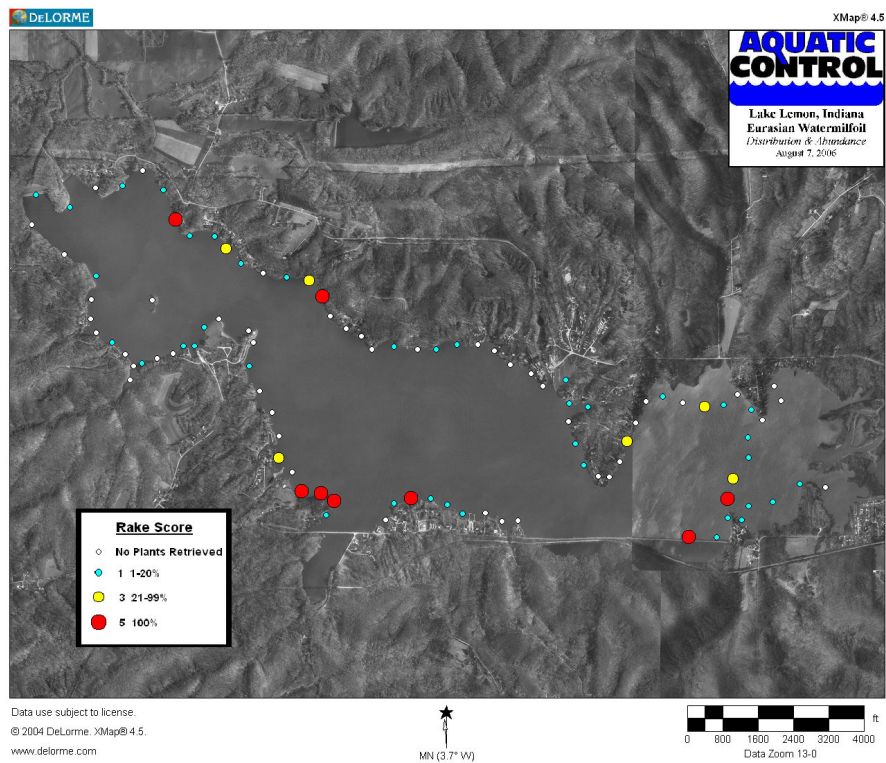


Figure 4. Lake Lemon, Eurasian watermilfoil distribution and abundance, August 7, 2006.



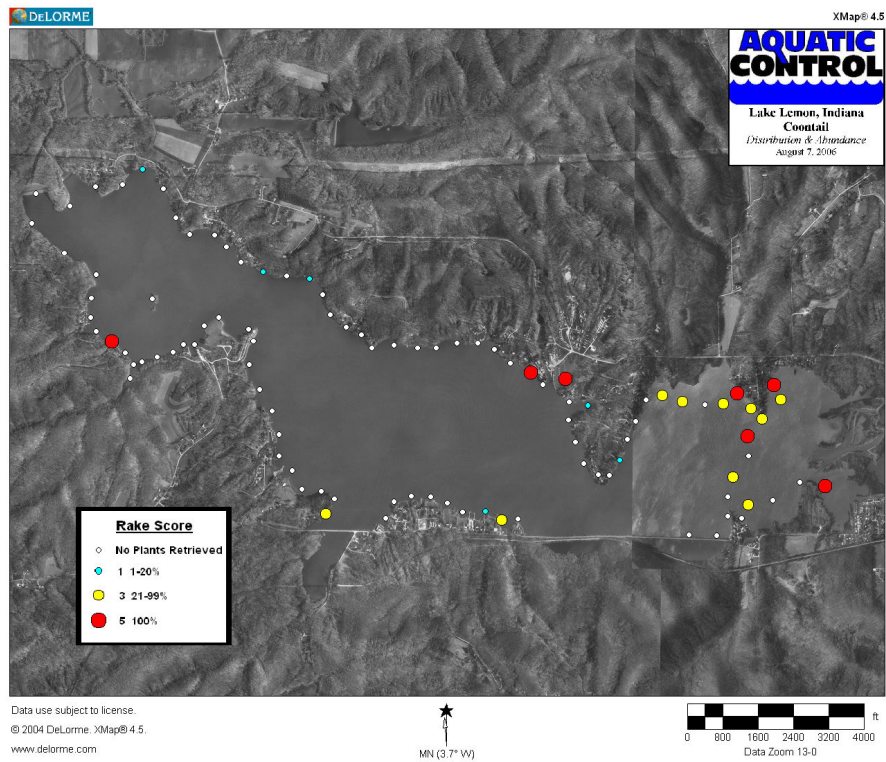


Figure 5. Lake Lemon, coontail distribution and abundance, August 7, 2006.

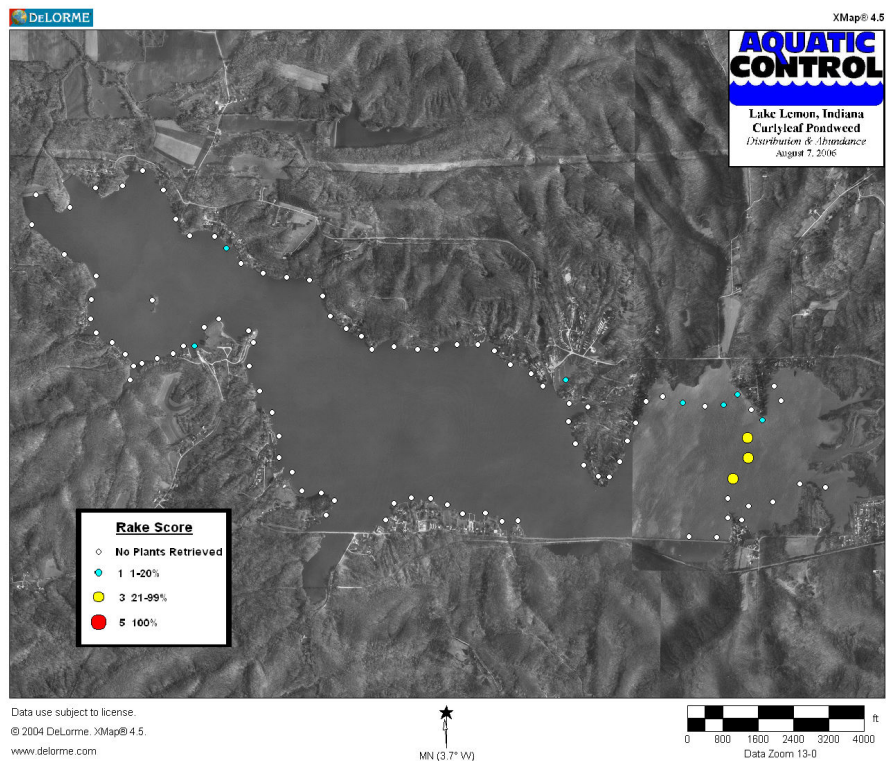


Figure 6. Lake Lemon, curlyleaf pondweed distribution and abundance, August 7, 2006.

### 2.3 Aquatic Vegetation Sampling Discussion

One of the primary goals of the vegetation management plan is to preserve and enhance the native plant community. The main limitation to native plant growth in Lake Lemon is the lack of light penetration caused by dense algae blooms. These blooms typically occur in late July or August. The blooms were not as severe this season, but they did occur by our August sampling (Figure 7). There appears to be no significant change in the August Secchi reading over the past three seasons.

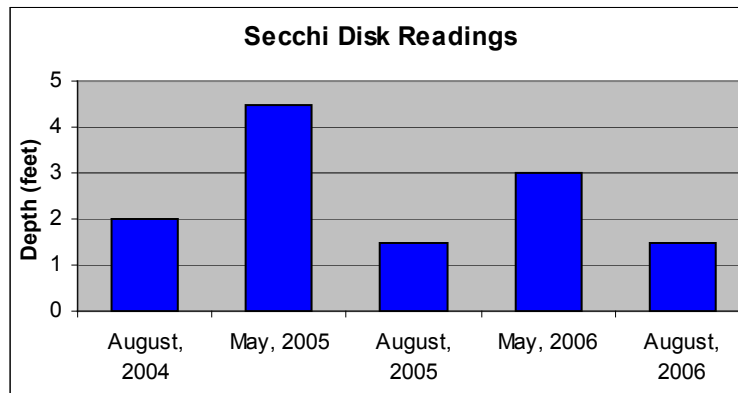


Figure 7. Lake Lemon, comparison of Secchi Disk readings in the last five surveys.

It appears that the overall abundance and diversity of native vegetation was not negatively impacted by this season's vegetation controls. There was an increase in treatment of native vegetation this season, but the native metrics remained the same or increased (Figure 8, 9,& 10). This is an indication that controls can take place to reduce the nuisance levels of these species while still maintaining diversity throughout the lake. Ideally, these metrics would increase in the future as Eurasian watermilfoil is controlled.

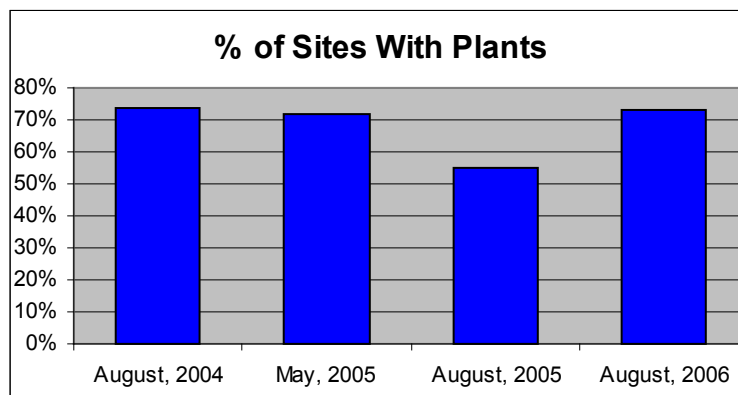


Figure 8. Lake Lemon, comparison of the percentage of sites with plants in the last four surveys.

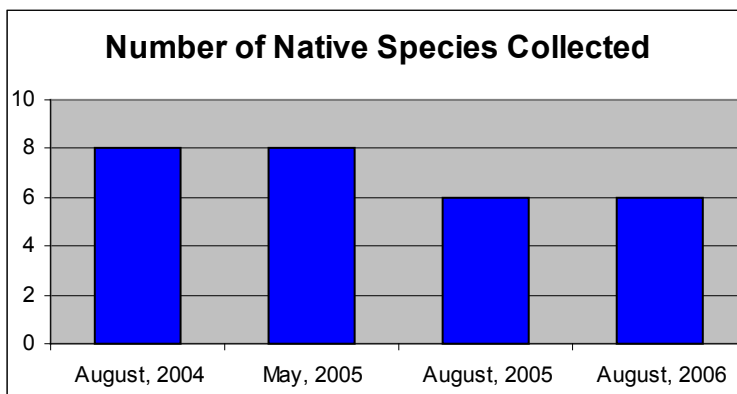


Figure 9. Lake Lemon, comparison of the number of native species collected in the last four surveys.

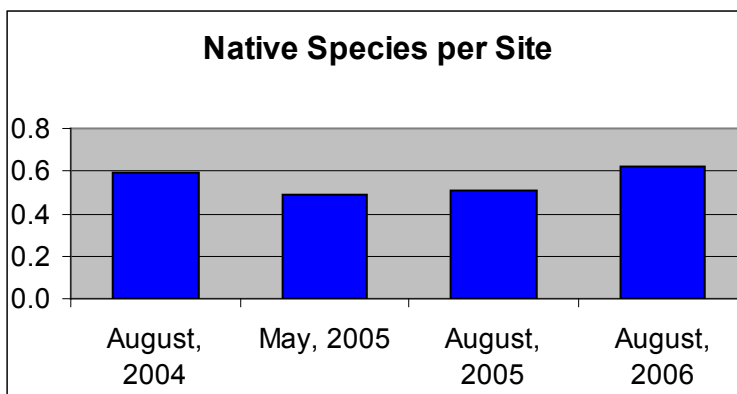


Figure 10. Lake Lemon, comparison of the average number of native species per sample site in the last four surveys.

Another goal of the vegetation management plan is to reduce the negative impacts caused by Eurasian watermilfoil. The May tier I survey indicated a reduction in milfoil density, especially in the large area in the east end of the lake that was treated last season. Due to a reduction in funding and a lack of LLCD funds, it was decided that only areas of milfoil that interfered with access would be treated. Many beds outside of the high use areas were not treated. This allowed for the milfoil beds to expand and infest new areas. The results indicate that milfoil frequency of occurrence increased by the August sampling (Figure 11).

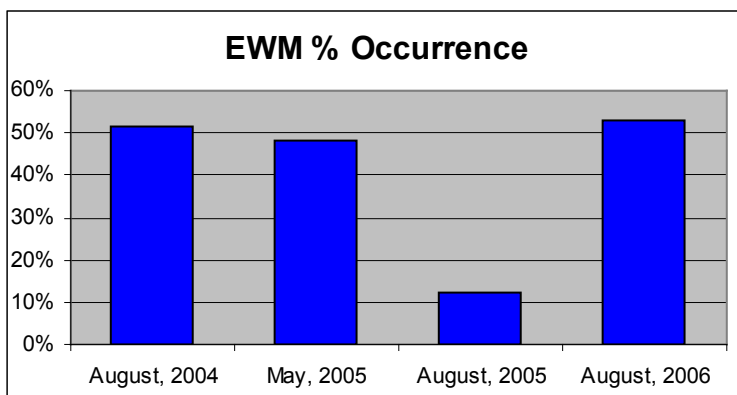


Figure 11. Lake Lemon, comparison of Eurasian watermilfoil percent occurrence in the last four surveys.

Curlyleaf pondweed reached nuisance levels in several areas in the spring of 2007. This species has historically not been a problem in Lake Lemon, but appears to be spreading. There was not a tier II survey completed in the spring of this season, but it was one of the most abundant species in the tier I survey. A strange phenomenon occurred this year where curlyleaf pondweed did not senesce like it typically does in the summer. This plant was present at 10% of the summer sample sites in the 2006 survey compared to no sites in 2005 (Figure 12). This species should be closely monitored in future surveys.

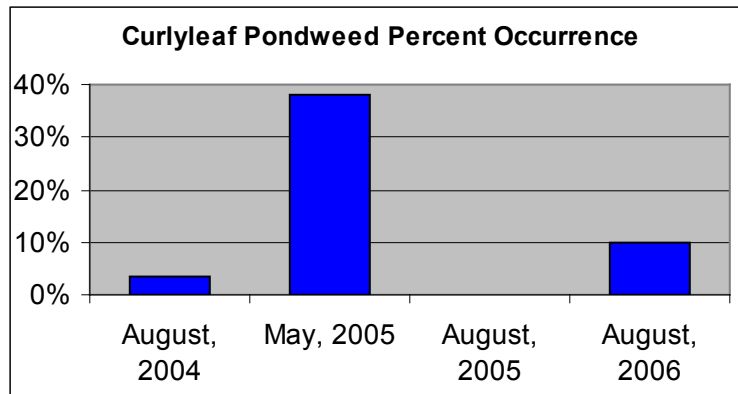


Figure 12. Lake Lemon, comparison of curlyleaf pondweed percent occurrence in the last four surveys.

### 3.0 2006 VEGETATION CONTROLS

The action plan called for selective treatment of Eurasian watermilfoil wherever it occurred with Renovate herbicide and treatment of native vegetation to keep open boating lanes. However, there was a reduction in funding this season for treatment of milfoil (requested \$30,000 and received \$20,000). Prior to the first treatment it was the decision of the LLCD and Aquatic Control that there would only be enough funds to treat milfoil in high-use areas. If there were any funds left over then they could be allocated for treatment of the milfoil beds that were not impairing lake use. With this strategy in mind, the first treatment was completed May 18 to 40.5 acres of Eurasian watermilfoil. LARE funds were used for this treatment. On the same day 5.0 acres of submersed native vegetation was also treated. Coontail was the primary nuisance native in the native treatment areas (Figure 13 & 14). This was the largest treatment of the season.



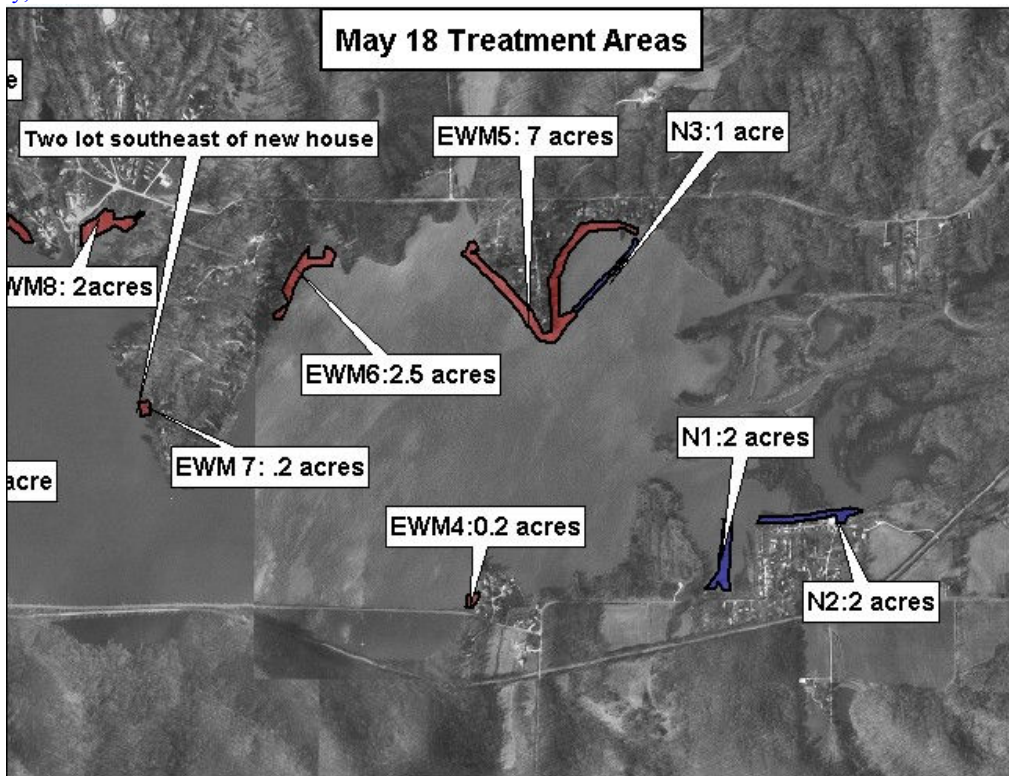


Figure 13. Lake Lemon (east end), Eurasian watermilfoil and submersed vegetation treatment, May 18, 2006 (EWM=milfoil area, N= native area).

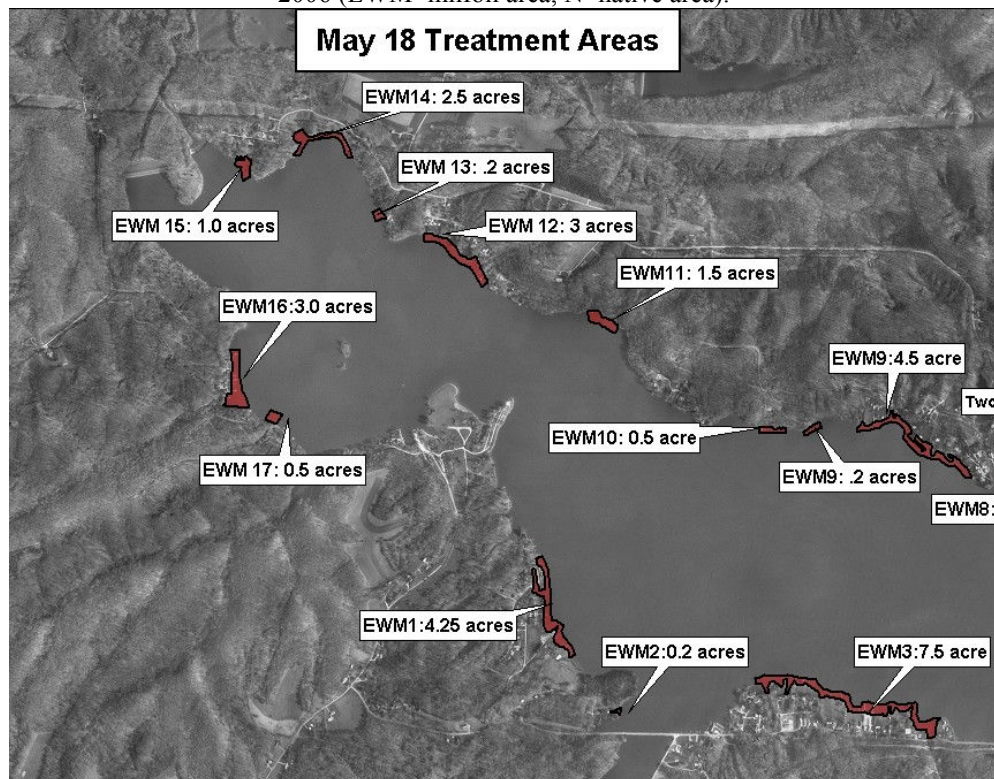


Figure 14. Lake Lemon (west end), Eurasian watermilfoil and submersed vegetation treatment, May 18, 2006.



The second treatment of the season was completed on June 5. Seven acres of Eurasian watermilfoil was treated with Renovate herbicide while 6.0 acres of native vegetation was treated with an Aquathol/Komeen combination. It was apparent that several other areas would need treatment, but not enough herbicide was brought to the second treatment. A third treatment was completed on June 9 to 2.0 acres of milfoil, 4.0 acres of submersed vegetation and 2.0 acres of spatterdock which was scattered about in the Chitwood channels on the east end of the lake. Another small treatment was completed on June 29 to 3.0 acres of native vegetation.

There was very little nuisance vegetation present throughout late June and July. In late July, several areas of coontail and milfoil began restricting boat access. A treatment was completed on July 31 to 5.5 acres of milfoil and 12.5 acres of primarily coontail (Figure 15).

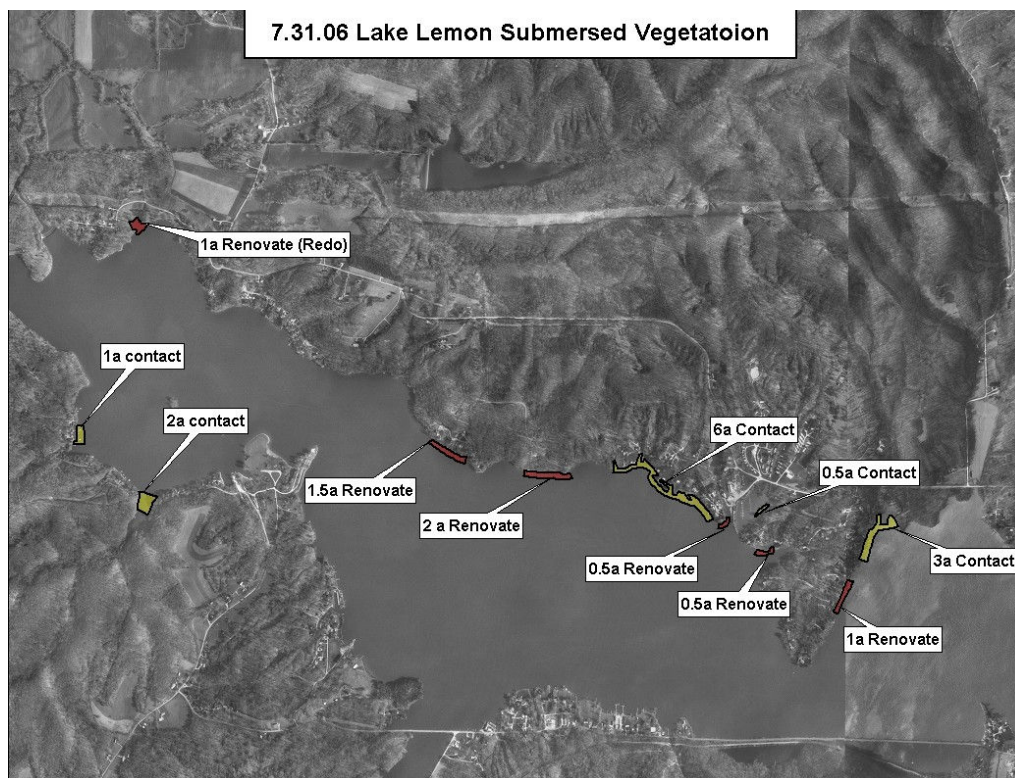


Figure 15. Lake Lemon treatment areas, July 28, 2006 (areas labeled contact were primarily native vegetation and areas labeled Renovate were Eurasian watermilfoil treatment areas).

During this treatment it became apparent that more coontail would require treatment. These treatment areas were mapped out after the July 31 treatment was completed. It was also time for treatment of the lotus that had expanded beyond the maintenance line. A total of 21.6 acres of native submersed vegetation was treated on August 8 along with 24.5 acres of lotus (Figure 16 & 17).

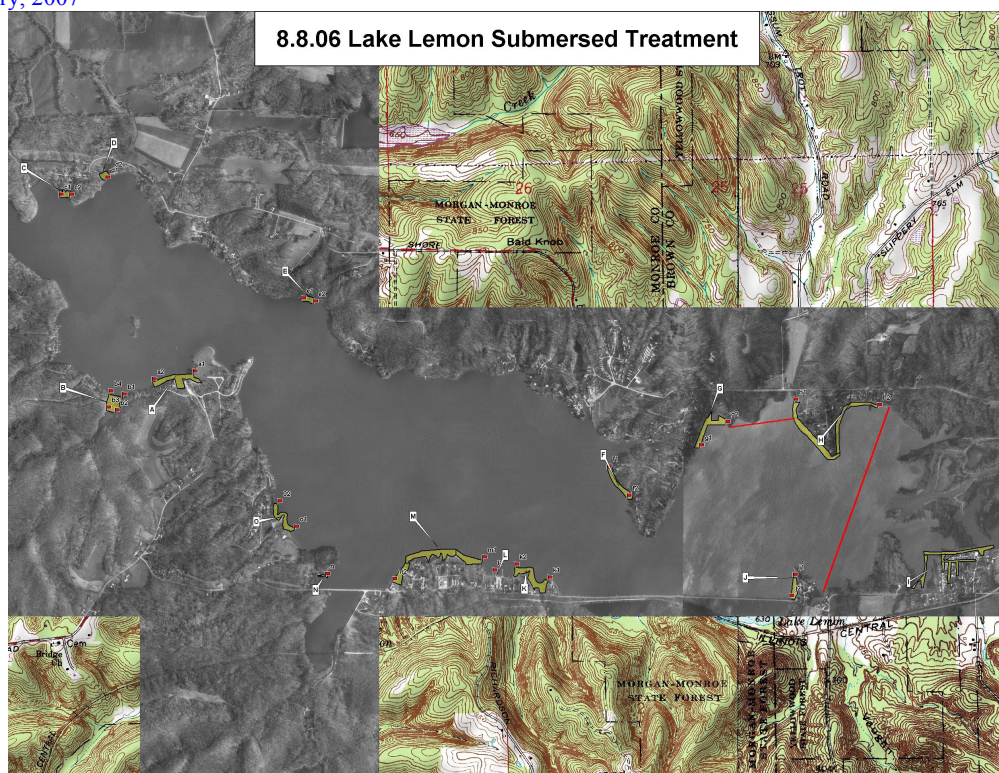


Figure 16. Lake Lemon submersed vegetation treatment, August 8, 2006.

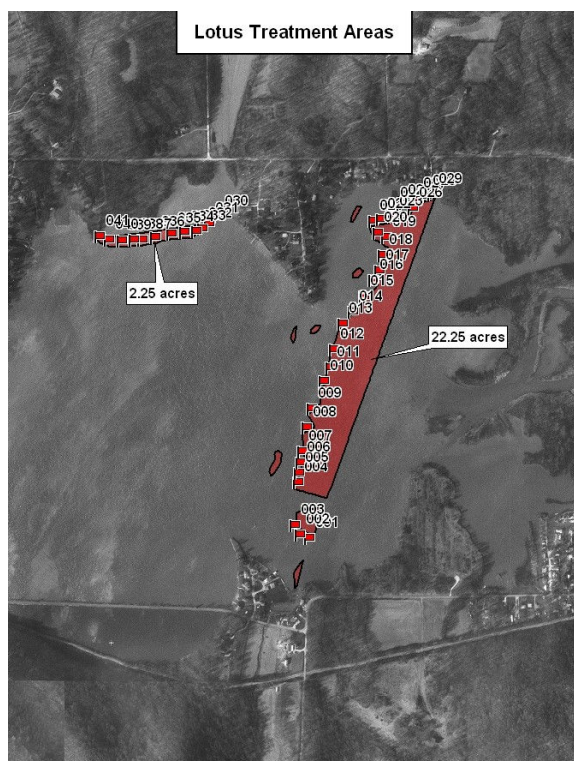


Figure 17. Lake Lemon lotus treatment areas, August 8, 2006.

The last treatment was completed August 29 to a small 2.0 acre area. Table 4 summarized all of the treatments completed on Lake Lemon during the 2006 season.



**Table 4. Summary of the 2006 Aquatic Vegetation Treatments on Lake Lemon (number listed is acres treated).**

Treatment Date	Selective Milfoil Treatment w/ Renovate Herbicide	Submersed Vegetation Treatment w/ Contact Herbicides	Lotus and Spatterdock Treatment
5/18/2006	40.5	5.0	
6/5/2006	7.0	6.0	
6/9/2006	2.0	4.0	2.0
6/29/2006		3.0	
7/31/2006	5.5	12.5	
8/8/2006		21.6	24.5
8/29/2006		2.0	

LLCD personnel also mechanically removed purple loosestrife throughout the lake margins. It is estimated that up to 50 plants were dug up and disposed of this season. Mechanical dredging was also initiated this season. Dredging should help reduce the amount of vegetation treatment that will be required next season.

#### 4.0 PUBLIC INVOLVEMENT

A public meeting was held on September 27, 2006 at the Unionville Retirement Center. Approximately 14 lake users attended the meeting along with district 6 fisheries biologist Dave Kittaka. All of those in attendance lived within the LLCD. A total of 7.1% had lived on the lake for 2 years or less, 7.1% for 2-5 years, 42.9% for 5-10 years, and 42.9% for more than 10 years. Of those surveyed 100% used the lake for boating, 100% used the lake for swimming, 21.4% used the lake for irrigation, 71.4% used the lake for fishing, and 7.1% used the lake for drinking. All of those in attendance believed that dredging was needed and were in favor of continuing the vegetation control activities.

In the author's opinion, one of the biggest problems concerning Lake Lemon is the poor water quality. However, only 21% of those surveyed felt like water quality was an important issue concerning Lake Lemon. This is despite the severe algae blooms that are experienced during the summer months. It will be important to educate the lake users on the importance of improving the lake's water quality. Best Management Practices were discussed in previous studies and reiterated at the public meeting. Regular newsletters could be used to remind residents of their potential impact on Lake Lemon's water quality. Those in attendance were also encouraged to attend the 2007 ILMS conference to be held in nearby Bloomington, IN. In addition to discussion of water quality, LLCD was encouraged to fund another fish survey since the last one was completed six years ago and the fishery has likely changed in that time frame.

Another topic discussed at the public meeting was the recent discovery of Hydrilla (*Hydrilla verticillata*) in Lake Manitou. Hydrilla is an invasive aquatic species that was originally discovered in Florida in the 1960's. There are many characteristics of hydrilla that make it a threat to Indiana waterways. This species can grow in lower light conditions than most native species, grows faster than most native species, and can shade out other species by forming a surface canopy. Hydrilla can be easily confused with

native elodea. The best way to distinguish Hydrilla is that it typically has five leaves along each whorl along with visible serrated edges along the leaf margin (Figure 14). What makes controlling the spread of Hydrilla difficult is the fact that it can be spread by fragments. **That is why it is vitally important that lake users remove all plants and sediment from their boats when entering and leaving Lake Lemon.** More information about controlling the spread of Hydrilla can be found at [www.protectyourwaters.net](http://www.protectyourwaters.net).



Figure 18. Illustration of Hydrilla on the left compared to native elodea on the right. Hydrilla typically contains five toothed leaves per whorl while native elodea typically has three leaves per whorl and the teeth are not visible on the leaves (Illustrations provided by Applied Biochemist).

## 5.0 ACTION PLAN AND BUDGET UPDATE

The 2006 treatments effectively controlled Eurasian watermilfoil in the treated areas, but as previously mentioned, there were several areas of milfoil that did not receive treatment. These areas continued to spread throughout the season. In 2007, it is recommended that the LLCD funds treatment of nuisance plant growth in the high use areas with LLCD funds, no matter if they are treating native vegetation or Eurasian watermilfoil. Treatments in these areas should be completed with contact herbicides that are not selective to milfoil. On several occasions these high use areas would be treated twice, once for milfoil and then once for native plants. In order to insure season long control the contact herbicide treatment should be held off until early to mid June. This will allow for control through much of the busy season (if treatment takes place in May it is likely that nuisance levels of vegetation could return by late July). The LARE funds could then be designated for treatment of milfoil beds in the lower use areas, which were not treated in 2006.

Efforts to educate residents on the benefits of native vegetation should be continued. This may include annual meetings, newsletters, and notices at the LLCD office.

Educating residents on the value of native vegetation may help enhance the Lake Lemon ecosystem and may help to save LLCD funds.

Another factor may help reduce the need for herbicide treatments is the large scale dredging program which was initiated on Lake Lemon in 2006. This program was designed to remove sediment that has built up in many boating lanes making navigation very difficult. In the past, these shallow areas have become infested with dense vegetation that had to be treated on multiple occasions. The deepening of these areas should reduce the amount of treatments required to keep boating lanes open.

It is difficult to estimate how much milfoil will require treatment next season, so it is our recommendation that the LLCD asks for the same amount that was requested last season. Two surveys should also be completed in 2007 to monitor the plant community. A tier I survey should be completed in May and a tier II survey in August. The Tier I survey will provide maps that can be used to designate late spring treatment areas and the Tier II survey will help monitor the success of the controls. Special attention should be paid to curlyleaf pondweed abundance in the spring surveys. If this species continues to spread, a different action strategy may be needed.

**It is recommended that the Conservancy request \$35,200 from the LARE program for treatment and the plan update. A total of \$30,000 would be for treatment of 65-75 acres of milfoil and \$5,200 would go towards plant sampling and plan updates.** It has been documented that as the milfoil is controlled that native plants may pose more of a problem for lake users. With this in mind, native plant control may be a larger part of the budget in upcoming years (Table 5).

**Table 5. Updated Budget Estimate.**

	2007	2008	2009
Triclopyr Application Cost (Eurasian watermilfoil only)	\$30,000	\$20,000	\$10,000
Herbicide & Application Cost (spatterdock, lotus, and pondweeds)	\$30,000	\$30,000	\$40,000
Vegetation Sampling & Plan Update	\$5,200	\$5,200	\$5,200
<b>Total:</b>	<b>\$65,200</b>	<b>\$55,200</b>	<b>\$55,200</b>



## 6.0 Appendix Update

### 6.1 2006 Sampling Data-Tier II Survey

Lake	Date	Latitude	Longitude	Design	Site	Depth	RAKE	MYSPP2	POCR3	CEDE4	CH7AR	NAMI	NAFL	POPE6	POPJ7
Lemon	8/7/06	39.26409	-86.413047		1	5.0	5	1				1			5
Lemon	8/7/06	39.2646	-86.411847		2	3.0	1				1				1
Lemon	8/7/06	39.26396	-86.409482		3	7.0	0								
Lemon	8/7/06	39.26313	-86.409109		4	7.0	0								
Lemon	8/7/06	39.26169	-86.40943		5	4.0	1	1							
Lemon	8/7/06	39.26012	-86.40859		6	8.0	0								
Lemon	8/7/06	39.25882	-86.407596		7	8.0	0								
Lemon	8/7/06	39.25734	-86.407045		8	5.0	1					1			1
Lemon	8/7/06	39.25603	-86.407028		9	5.0	3	3				1			
Lemon	8/7/06	39.25512	-86.405967		10	5.0	0								
Lemon	8/7/06	39.25396	-86.405197		11	4.0	5	5							
Lemon	8/7/06	39.25382	-86.403642		12	4.0	5	5							
Lemon	8/7/06	39.25336	-86.402633		13	6.0	5	5							
Lemon	8/7/06	39.25246	-86.403297		14	5.0	3	1		3					
Lemon	8/7/06	39.25217	-86.398492		15	5.0	0								
Lemon	8/7/06	39.25317	-86.397858		16	5.0	1	1							
Lemon	8/7/06	39.25353	-86.396462		17	5.0	5	5							
Lemon	8/7/06	39.25349	-86.394895		18	5.0	1	1							
Lemon	8/7/06	39.25307	-86.393602		19	3.0	1	1				1			
Lemon	8/7/06	39.25253	-86.392338		20	4.0	1	1						1	
Lemon	8/7/06	39.25259	-86.390514		21	5.0	1			1					
Lemon	8/7/06	39.25205	-86.389195		22	5.0	3			3					
Lemon	8/7/06	39.2521	-86.387923		23	7.0	0								
Lemon	8/7/06	39.25113	-86.374246		24	7.0	5	5							
Lemon	8/7/06	39.25107	-86.372013		25	5.0	1	1							
Lemon	8/7/06	39.25228	-86.371105		26	5.0	1	1							
Lemon	8/7/06	39.25349	-86.371127		27	4.0	5	5							
Lemon	8/7/06	39.25213	-86.370017		28	3.0	1	1				1			
Lemon	8/7/06	39.25302	-86.369446		29	3.0	3	1		3		1			
Lemon	8/7/06	39.25327	-86.367548		30	3.0	3	1				3			
Lemon	8/7/06	39.25438	-86.365387		31	4.0	5	1				5			
Lemon	8/7/06	39.25416	-86.363329		32	3.0	5			5					
Lemon	8/7/06	39.25471	-86.370661		33	5.0	5	3	3	3					
Lemon	8/7/06	39.25603	-86.369491		34	5.0	3	1	3						
Lemon	8/7/06	39.25727	-86.36951		35	3.0	5	1	3	5					
Lemon	8/7/06	39.25834	-86.368345		36	4.0	3		1	3					
Lemon	8/7/06	39.25955	-86.366853		37	3.0	3			3					
Lemon	8/7/06	39.26044	-86.367436		38	3.0	5			5					
Lemon	8/7/06	39.259	-86.369231		39	3.0	3	1		3					
Lemon	8/7/06	39.25993	-86.37036		40	3.0	5		1	5					
Lemon	8/7/06	39.25927	-86.371482		41	4.0	3	1	1	3					
Lemon	8/7/06	39.25919	-86.372945		42	5.0	3	3							
Lemon	8/7/06	39.25941	-86.374712		43	5.0	3		1	3					
Lemon	8/7/06	39.25978	-86.376341		44	5.0	3	1		3					
Lemon	8/7/06	39.25947	-86.377685		45	5.0	0								
Lemon	8/7/06	39.25815	-86.378474		46	5.0	0								
Lemon	8/7/06	39.25705	-86.37914		47	2.0	3	3							
Lemon	8/7/06	39.25576	-86.379795		48	4.0	1			1					
Lemon	8/7/06	39.25481	-86.380623		49	3.0	0								
Lemon	8/7/06	39.25486	-86.381468		50	4.0	0								
Lemon	8/7/06	39.25553	-86.382653		51	5.0	1	1							
Lemon	8/7/06	39.25687	-86.383297		52	8.0	1	1							
Lemon	8/7/06	39.25823	-86.38388		53	5.0	0								
Lemon	8/7/06	39.25913	-86.382351		54	4.0	1	1		1					
Lemon	8/7/06	39.25935	-86.383842		55	4.0	1	1							
Lemon	8/7/06	39.26083	-86.384125		56	3.0	5	1	1	5					
Lemon	8/7/06	39.26043	-86.385932		57	5.0	0								
Lemon	8/7/06	39.26121	-86.386878		58	4.0	5			5					
Lemon	8/7/06	39.26175	-86.388534		59	2.0	0								
Lemon	8/7/06	39.26261	-86.389794		60	4.0	1					1			1
Lemon	8/7/06	39.263	-86.391154		61	3.0	1					1			
Lemon	8/7/06	39.26301	-86.392778		62	4.0	5	1				1			5
Lemon	8/7/06	39.2627	-86.394447		63	3.0	3	1				3			1
Lemon	8/7/06	39.26271	-86.395968		64	5.0	0								
Lemon	8/7/06	39.2629	-86.39783		65	4.0	1	1							
Lemon	8/7/06	39.2627	-86.399616		66	4.0	0								
Lemon	8/7/06	39.26351	-86.400449		67	4.0	0								
Lemon	8/7/06	39.26398	-86.401677		68	3.0	0								
Lemon	8/7/06	39.26478	-86.40293		69	5.0	0								
Lemon	8/7/06	39.26602	-86.403531		70	3.0	5	5				1			
Lemon	8/7/06	39.26699	-86.404623		71	3.0	5	3		1		3			1
Lemon	8/7/06	39.26717	-86.406414		72	4.0	1	1							
Lemon	8/7/06	39.26744	-86.4083		73	4.0	1			1					
Lemon	8/7/06	39.26805	-86.410071		74	5.0	1	1							
Lemon	8/7/06	39.269	-86.411274		75	3.0	3	3	1						
Lemon	8/7/06	39.2697	-86.41218		76	5.0	1	1							
Lemon	8/7/06	39.26976	-86.414169		77	5.0	3	1				3			
Lemon	8/7/06	39.27078	-86.415273		78	4.0	5	5				1			
Lemon	8/7/06	39.27258	-86.416293		79	5.0	1	1				1			
Lemon	8/7/06	39.27378	-86.417982		80	3.0	5			1		5			
Lemon	8/7/06	39.27285	-86.419541		81	4.0	1	1							
Lemon	8/7/06	39.27273	-86.421733		82	4.0	1					1			
Lemon	8/7/06	39.27152	-86.423768		83	10.0	1	1				1			
Lemon	8/7/06	39.27228	-86.42647		84	5.0	1	1							
Lemon	8/7/06	39.27044	-86.426829		85	8.0	0								
Lemon	8/7/06	39.2686	-86.424226		86	3.0	0								
Lemon	8/7/06	39.26728	-86.42168		87	4.0	3	1							
Lemon	8/7/06	39.26575	-86.417178		88	5.0	5					5			
Lemon	8/7/06	39.26578	-86.422065		89	5.0	0								
Lemon	8/7/06	39.26462	-86.422109		90	5.0	0								
Lemon	8/7/06	39.26373	-86.421672		91	5.0	0								
Lemon	8/7/06	39.26315	-86.420414		92	3.0	5	1		5		1			1
Lemon	8/7/06	39.26239	-86.419371		93	5.0	0								
Lemon	8/7/06	39.2617	-86.418688		94	5.0	0								
Lemon	8/7/06	39.26082	-86.418962		95	2.0	0								
Lemon	8/7/06	39.26184	-86.418005		96	5.0	1	1							
Lemon	8/7/06	39.26216	-86.416785		97	3.0	1								
Lemon	8/7/06	39.26247	-86.415546		98	3.0	5					5	1		1
Lemon	8/7/06	39.26292	-86.414677		99	4.0	5	1				5			
Lemon	8/7/06	39.26293	-86.413811		100	5.0	5	1	1			5			

## 6.2 2007 Vegetation Control Permit Application



### APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)

Approved State Board of Accounts 1987

☐ Whole Lake ☒ Multiple Treatment Areas

Check type of permit

INSTRUCTIONS: Please print or type information

#### FOR OFFICE USE ONLY

License No.

Date Issued

Lake County

Return to: Page 1 of 9

DEPARTMENT OF NATURAL RESOURCES

Division of Fish and Wildlife

Commercial License Clerk

402 West Washington Street, Room W273

Indianapolis, IN 46204

FEE: \$5.00

Applicant's Name <b>Lake Lemon Conservancy District</b>		Lake Assoc. Name <b>Lake Lemon Conservancy District</b>	
Rural Route or Street <b>7599 N. Tunnel Road</b>		Phone Number <b>812-334-0233</b>	
City and State <b>Unionville, IN</b>		ZIP Code <b>47468</b>	
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number	
Rural Route or Street		Phone Number	
City and State		ZIP Code	

Lake (One application per lake) <b>Lake Lemon</b>	Nearest Town <b>Unionville</b>	County <b>Monroe-Brown</b>
Does water flow into a water supply		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Please complete one section for EACH treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # <b>1</b>	LAT/LONG or UTM's Maint. Line N39° 15.687' W86° 21.850' to N39°15.097' W86° 22.083'	
Total acres to be controlled <b>25</b>	Proposed shoreline treatment length (ft)	Perpendicular distance from shoreline (ft)
Maximum Depth of Treatment (ft) <b>4</b>	Expected date(s) of treatment(s) <b>Mid August with follow-up in early September</b>	
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical		
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. <b>Glyphosate and/or Imazapyr for control of Lotus which expands beyond maintenance line and to open boat channels, spatterdock will be treated in boat channels only.</b>		
Plant survey method: <input type="checkbox"/> Rake <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Other (specify)		

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
American Lotus	X	70
Eurasian watermilfoil		3
Coontail		20
Spatterdock	X	5
Chara		1
Elodea		1





Treatment Area # 6		LAT/LONG or UTM's N39.26440 W86.40284 to N39.26307 W86.39884	
Total acres to be controlled 2.71	Proposed shoreline treatment length (ft) 1750	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) Initial treatment in late May with follow-up in early July		
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate for selective control of Eurasian watermilfoil, Aquathol/komeen for small pondweed if they reach nuisance levels			
Plant survey method: <input checked="" type="checkbox"/> Rake <input type="checkbox"/> Visual <input type="checkbox"/> Other (specify) _____			
Aquatic Plant Name		Check if Target Species	Relative Abundance % of Community
Eurasian watermilfoil		X	50
Curlyleaf pondweed		X	30
American pondweed			5
Small pondweed		X	15
Treatment Area # 7		LAT/LONG or UTM's N39.26282 W86.39708 to N39.26046 W86.37590	
Total acres to be controlled 24.96	Proposed shoreline treatment length (ft) 13780	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) Initial treatment in late May with follow-up in early July		
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate for selective control of Eurasian watermilfoil, Aquathol/komeen for small pondweed & coontail if they reach nuisance levels			
Plant survey method: <input checked="" type="checkbox"/> Rake <input type="checkbox"/> Visual <input type="checkbox"/> Other (specify) _____			
Aquatic Plant Name		Check if Target Species	Relative Abundance % of Community
Eurasian watermilfoil		X	50
Curlyleaf pondweed		X	30
American Pondweed			2
Chara		X	3
Coontail		X	10
Small Pondweed		X	5



Treatment Area # 8		LAT/LONG or UTM's N39.26148 W86.37091 to N39.26110 W86.36442	
Total acres to be controlled 10.39	Proposed shoreline treatment length (ft) 3500	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 4	Expected date(s) of treatment(s) Initial treatment in late May with follow-up in early July		
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate for selective control of Eurasian watermilfoil, Aquathol/Komeen for small pondweed & coontail if they reach nuisance levels			
Plant survey method: <input checked="" type="checkbox"/> Rake <input type="checkbox"/> Visual <input type="checkbox"/> Other (specify) _____			
Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community	
Eurasian watermilfoil	X	40	
Coontail	X	40	
American Lotus		5	
Chara		5	
American Pondweed		5	
Elodea	X	5	
Treatment Area # 9		LAT/LONG or UTM's Boat lanes (see map)	
Total acres to be controlled 7.5	Proposed shoreline treatment length (ft)	Perpendicular distance from shoreline (ft)	
Maximum Depth of Treatment (ft) 4	Expected date(s) of treatment(s) Initial treatment in late May with follow-up in early July		
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate for selective control of Eurasian watermilfoil, Aquathol/Komeen for small pondweed & coontail if they reach nuisance levels			
Plant survey method: <input checked="" type="checkbox"/> Rake <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Other (specify) _____			
Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community	
Eurasian watermilfoil	X	5	
Coontail	X	50	
American Lotus		15	
Chara		5	
Brittle naiad		5	
Spatterdock		5	
Elodea	X	15	

Treatment Area # 10		LAT/LONG or UTM's N39.25131 W86.36853 to N39.25097 W86.37124	
Total acres to be controlled 3.55	Proposed shoreline treatment length (ft) 1800	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 4	Expected date(s) of treatment(s) Initial treatment in late May with follow-up in early July		
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate for selective control of Eurasian watermilfoil, Aquathol/Komeen for small pondweed & coontail if they reach nuisance levels			
Plant survey method: <input checked="" type="checkbox"/> Rake <input type="checkbox"/> Visual <input type="checkbox"/> Other (specify) _____			
Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community	
Eurasian watermilfoil	X	40	
Coontail	X	40	
Small pondweed	X	10	
Chara		2	
American Pondweed		3	
Elodea	X	5	
Treatment Area # 11		LAT/LONG or UTM's N39.25161 W86.38692 to N39.25166 W86.39856	
Total acres to be controlled 10.34	Proposed shoreline treatment length (ft) 6200	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 4	Expected date(s) of treatment(s) Initial treatment in late May with follow-up in early July		
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Renovate for selective control of Eurasian watermilfoil, Aquathol/komeen for small pondweed & coontail if they reach nuisance levels			
Plant survey method: <input checked="" type="checkbox"/> Rake <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Other (specify) _____			
Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community	
Eurasian watermilfoil	X	50	
American water willow		10	
Coontail	X	20	
Curlyleaf pondweed	X	20	



Treatment Area #	14	LAT/LONG or UTM's	Throughout Lake
Total acres to be controlled		Proposed shoreline treatment length (ft)	Perpendicular distance from shoreline (ft)
Maximum Depth of Treatment (ft)	6	Expected date(s) of treatment(s)	Initial treatment in late May with follow-up in early July
Treatment method:	<input type="checkbox"/> Chemical	<input type="checkbox"/> Physical	<input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control.			
Renovate for selective control of Eurasian watermilfoil throughout entire lake (see 2004 avmp and 2006 update)			
Plant survey method:	<input checked="" type="checkbox"/> Rake	<input type="checkbox"/> Visual	<input type="checkbox"/> Other (specify) Data from August 2006 Tier II plant sampling
Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community	
Eurasian watermilfoil	X	45	
Coontail		20	
Brittle naiad		20	
Small pondweed		5	
Chara		1	
Curlyleaf pondweed		7	
American elodea		1	
Sago pondweed		1	
<i>INSTRUCTIONS: Whoever treats the lake fills in "Applicant's Signature" unless they are a professional. If they are a professional company who specializes in lake treatment, they should sign on the "Certified Applicant" line.</i>			
Applicant Signature			Date
Certified Applicant's Signature			Date

FOR OFFICE ONLY		
<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Fisheries Staff Specialist
<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Environmental Staff Specialist

Mail check or money order in the amount of \$5.00 to:

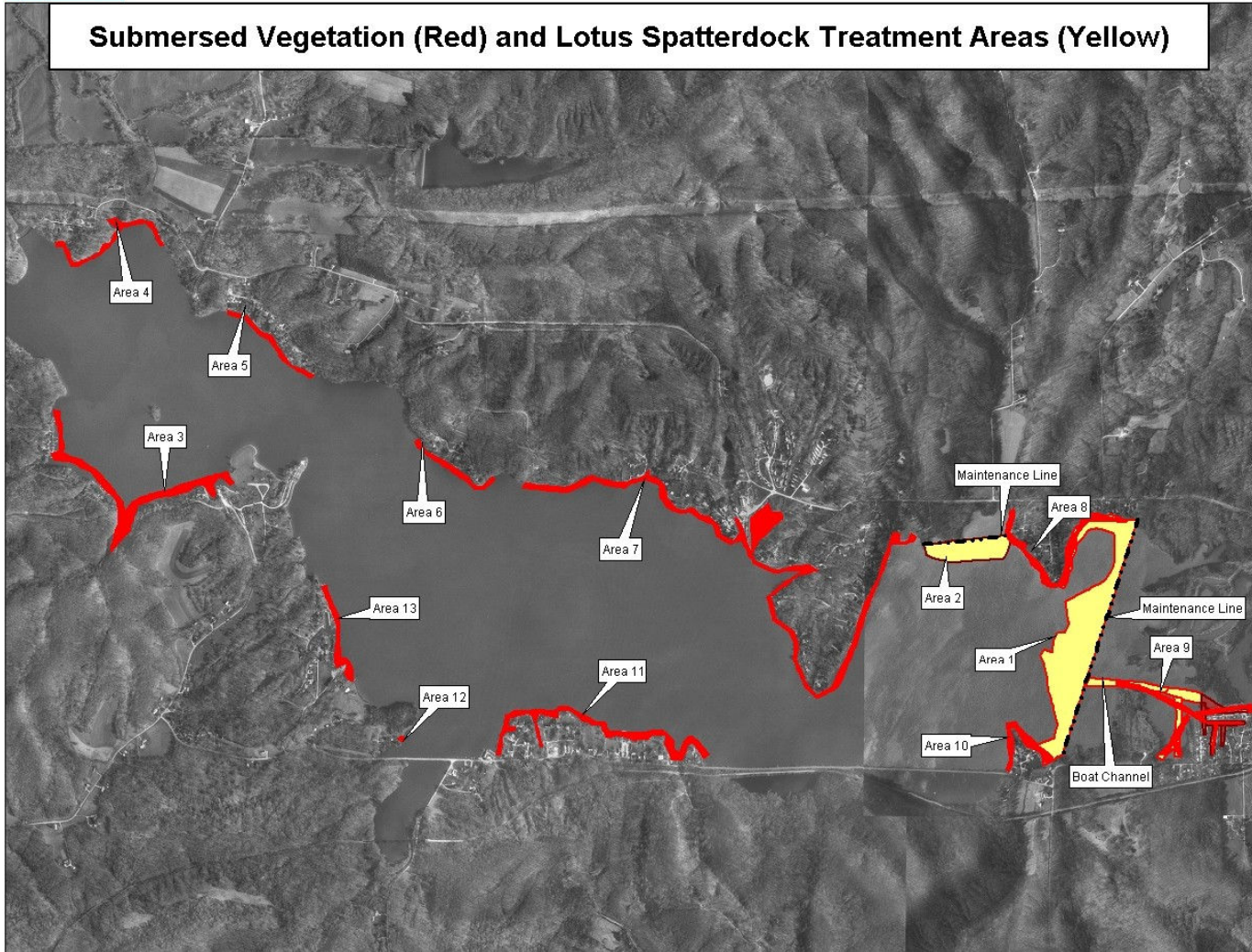
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 INDIANAPOLIS, IN 46204



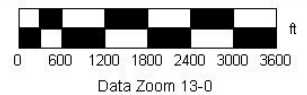
## Vegetation Control Permit Application Map (Page 9 of 10)



XMap® 4.5



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**Vegetation Control Permit Additions (Page 10 of 10):**

